Foth & Van Dyke

Engineers
Architects
Planners
Scientists

10340 Viking Drive, Suite 100
Eden Prairie, MN 55344
612/942-0396
FAX: 612/942-0865

January 8, 1991

90V8

Mr. Tom Crable
VA Medical Center
One Veterans Drive
Minneapolis, Minnesota 55417

Dear Mr. Crable:

RE: Underground Storage Tank Removal
Ft. Snelling National Cemetery
7601 34th Avenue South
Minneapolis, MN 55450

INTRODUCTION

Foth & Van Dyke was contracted by the Department of Veterans Affairs to observe and document the removal of three underground storage tanks from the Fort Snelling National Cemetery property. A 1000-gallon tank, a 1500-gallon tank, and a 4000-gallon tank were removed from the site. Foth & Van Dyke also collected soil samples from the excavation for field screening and laboratory analyses. This letter summarizes field activities and laboratory data and makes a recommendation for no further investigative work or remedial action at the site.

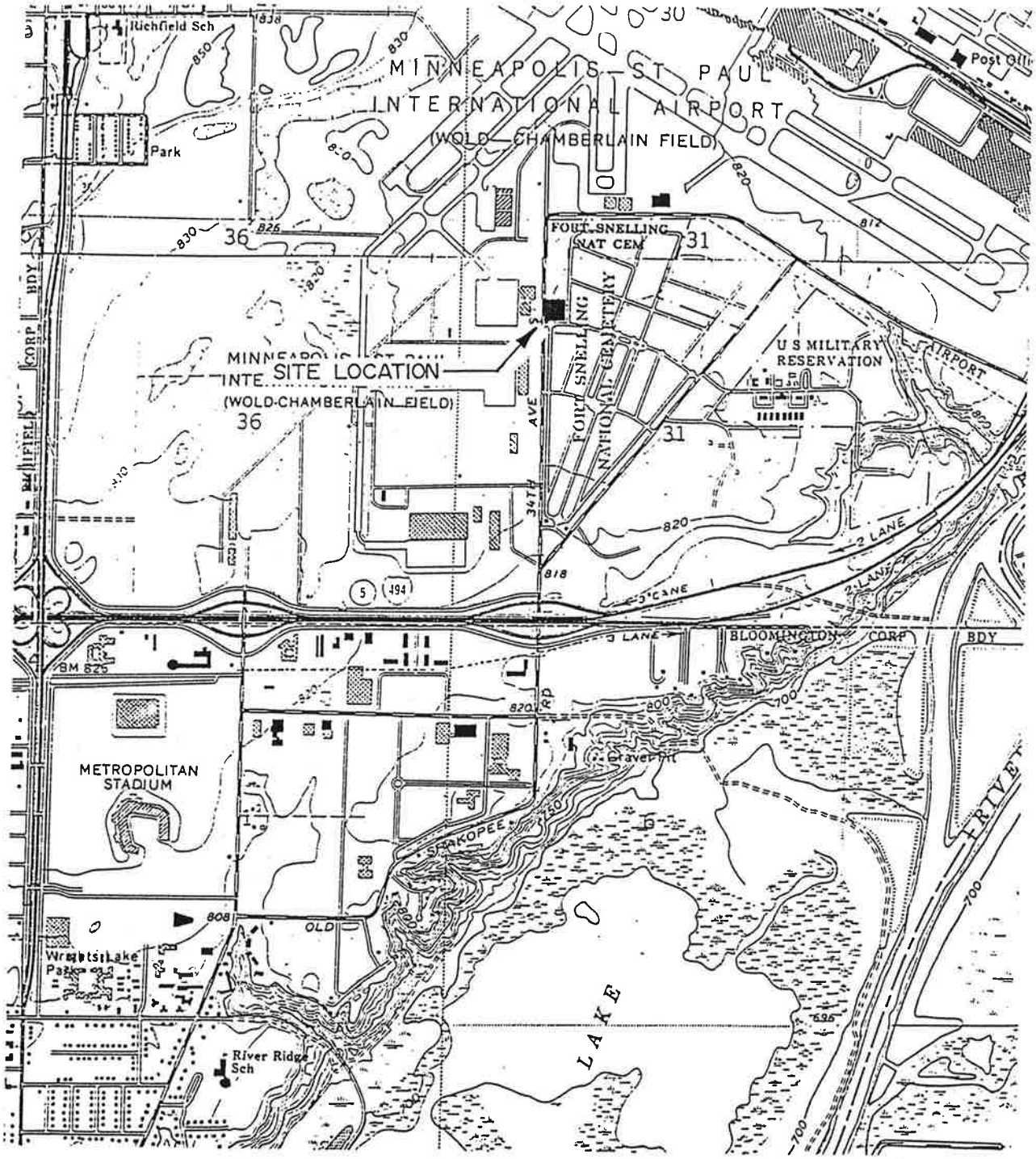
BACKGROUND

The Ft. Snelling National Cemetery is located at 7601 34th Avenue South, Minneapolis, Minnesota. An area map is shown in Figure 1. Three underground storage tanks were removed from the Fort Snelling National Cemetery property on October 22 and 23, 1990 by Grigg's Contracting, Inc. of Minneapolis, Minnesota. Disposal of the tanks was completed by Grigg's Contracting. The former locations of the tanks are shown in Figure 2.

PROJECT RESULTS

The first tank removed was the 1000-gallon underground storage tank. This bare steel tank was observed by Foth & Van Dyke personnel to be in good to fair condition with pitting and surface rust. The tank previously contained unleaded gasoline and according to the Department of Veterans Affairs was reported to be 32 years old.

The second tank removed was a 4000-gallon underground storage tank. This bare steel tank was observed by Foth & Van Dyke personnel to be in fair condition with some



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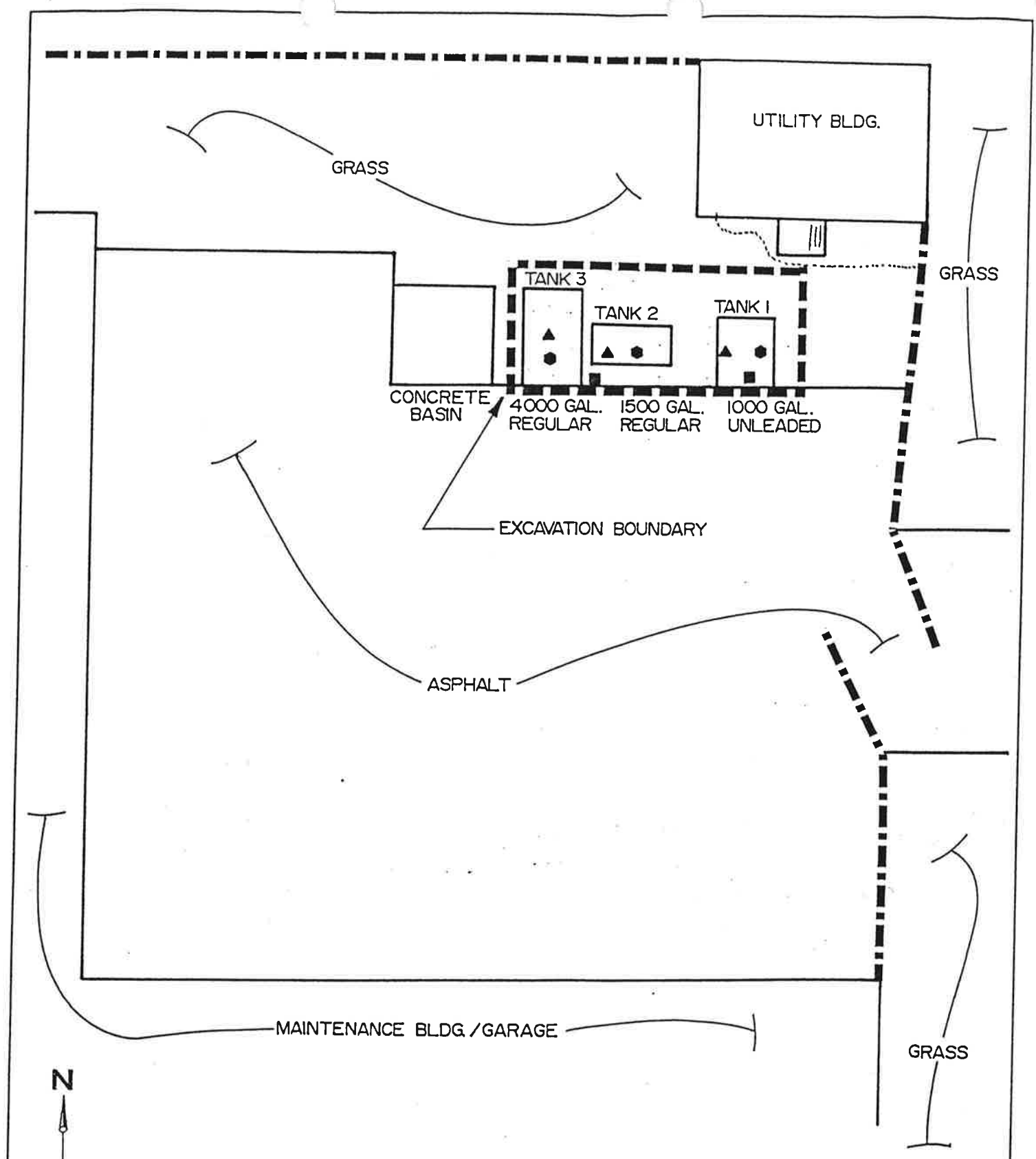
SOURCE: ST. PAUL WEST, MINN
7.5 QUADRANGLE

FORT SNELLING NATIONAL CEMETERY

FIGURE 1

AREA MAP

Scale: 1" = 2400 0	Date: 11/30/90
Prepared by: Foth & Van Dyke	By: ALD



FORT SNELLING NATIONAL CEMETERY

FIGURE 2

SITE MAP

Scale: 1" = 20'	Date: 11/30/90
Prepared by: Foth & Van Dyke	By: ALD

noticeable pitting. According to information provided by the Department of Veterans Affairs, the age of the tank was 14 years. This tank was previously used for storage of regular gasoline until the time of removal.

The third tank removed was a 1500-gallon underground storage tank. This bare steel tank was observed by Foth & Van Dyke personnel to be in fair to poor condition. There was noticeable pitting on the tank and some discoloration and moisture around one end of the tank. The age of this tank was 16 years according to the Department of Veterans Affairs. Until the time of removal, this tank was used for storage of regular gasoline.

Soils removed from the excavation consisted of brown, poorly graded, medium-to-coarse grained sand with gravel. The soils had a noticeable petroleum odor and some discoloration. The excavation was enlarged to remove soils believed to have been impacted by a petroleum release. During the excavation process, samples of the soils were collected at an approximate frequency of one per every 10 cubic yards of soil removal, from the bottom of the excavation and from the undisturbed side walls and subsequently screened for the presence of ionizable organic compounds using a Photovac MicroTIP calibrated according to manufacturer's specifications. Headspace analysis was performed in accordance with the Minnesota Pollution Control Agency (MPCA) "Jar Headspace Analytical Screening Procedure." A summary of headspace readings is presented in section V-B of the excavation report. Soils with visible evidence of contamination and soils with elevated TIP readings were stockpiled on site for future remediation.

Review of the Quaternary Hydrogeologic and topographic maps of the area indicate groundwater is at an estimated depth of 80-100 feet. The estimated depth of the groundwater is based on the elevation of the site and the elevation of the Mississippi River. Soils were excavated to a depth of 15 feet, and groundwater was not encountered in the excavation.

Soil samples were collected for laboratory analysis from approximately two feet below the tanks and from three feet below the dispenser. Soil samples were also collected as the excavation was extended to remove the impacted soil. A grab sample from the stockpiled soils was also collected for laboratory analysis. The samples were thermally preserved upon collection and transported under chain-of-custody procedures to PACE Laboratories, Inc. of Minneapolis, Minnesota.

TABLE 1

Laboratory Analysis
Ft. Snelling National Cemetery
Minneapolis, Minnesota

	MDL	SV-1 2' Below South End of Tank 1	SV-2 2' Below North End of Tank 1	SV-10B 3' Below Dispensers	SV-12 2' Below North End of Tank 3
Total Lead	5.0	ND	5.7	19	7.2
MTBE	0.12	ND	ND	ND	ND
Benzene	0.12	ND	ND	ND	ND
Ethylbenzene	0.12	ND	ND	ND	ND
Toluene	0.12	ND	ND	ND	ND
Xylene	0.12	ND	ND	ND	ND
THC as Gasoline	1.0	ND	ND	ND	ND

All values are in mg/kg=parts per million (ppm)
MTBE = Methyl tertiary butyl ether
THC = Total hydrocarbons
ND = Not detected
F = Sample contained hydrocarbons less volatile than gasoline
MDL = Method detection limit

90V8

TABLE 1 (Cont.)

	SV-13 2' Below North End of Tank 3	SV-15 Stockpile	SV-19 5' Below West End of Tank 2	SV-24 East Bottom of Excavation 15'	SV-27 West Bottom of Excavation 15'
Total Lead	8.9	20	21	19	6.6
MTBE	ND	ND	ND	ND	ND
Benzene	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND
Xylene	ND	ND	ND	ND	ND
THC as Gasoline	ND	31F	2.6F	ND	ND

All values are in mg/kg=parts per million (ppm)
MTBE = Methyl tertiary butyl ether
THC = Total hydrocarbons
ND = Not detected
F = Sample contained hydrocarbons less volatile than gasoline
MDL = Method detection limit

90V8

The samples were analyzed for the presence and concentration of methyl tertiary butyl ether (MTBE); benzene, ethylbenzene, toluene, xylene (BETX); total hydrocarbons (THC) as gasoline; and total lead. A summary of the laboratory analysis is presented in Table 1.

Lead was detected in all but one of the soil samples analyzed. The levels detected are below typical background levels, 70-100 ppm, for lead (Linday, 1979). The only other parameter detected was total hydrocarbons as gasoline. This parameter was detected in the stockpile sample (31 ppm) and in the sample collected five feet below the west end of tank 2 (2.6 ppm), which formerly contained regular gasoline.

Additional hydrocarbons that are less volatile than gasoline were detected in soil samples collected from the stockpile and at five feet below the west end of tank 2. Specific parameters and concentrations were not identified by the laboratory. Total hydrocarbon values for soil left in place were detected in sample SV-19 at low concentrations (2.6 ppm) and in the opinion of Foth & Van Dyke these soils likely pose no immediate environmental impact to soil or groundwater.

Stockpiled soils have been thermally treated by Clean Soils, Inc. of St. Paul, Minnesota under approval of the MPCA.

CONCLUSIONS

Field and laboratory data indicate that a petroleum release has occurred at this site. Removal of the tank and the contaminated soil has likely remediated the immediate area. Foth & Van Dyke, therefore, recommends no further investigative work or remedial action be performed at this site.

If there is any additional information you need, please call us at (612) 942-0396.

Sincerely,

FOTH & VAN DYKE

Allison L. Dennen
Project Geologist

Fred J. Doran
Division Manager

ALD/FJD:jmk

cc: Anne Bidwell, MPCA

EXCAVATION REPORT FOR PETROLEUM RELEASE SITES

Minnesota Pollution Control Agency
Tanks and Spills Section
April 25, 1990

The information below should be completed and submitted to the Minnesota Pollution Control Agency (MPCA) Tanks and Spills Section to document excavation of petroleum contaminated soil. Excavations must be done in accordance with the MPCA document "Excavation of Petroleum Contaminated Soil". Preliminary site investigation reports (if conducted) should be included with this report.

Additional pages may be attached. Please type or print clearly.

I. BACKGROUND

A. Site: Ft. Snelling National Cemetery

Street: 7601 34th Avenue South
City, Zip: Minneapolis, MN 55450
County: Hennepin

MPCA Site ID#: LEAK0000 3444

B: Tank Owner/Operator: Dept. of Veteran's Affairs

Mailing Address: 810 Vermont Avenue NW
Street/Box:
City, Zip: Washington, DC 20420
Telephone: 202/389-2696

C. Excavating Contractor: Griggs Contracting

Contact: Tom Ames
Telephone: 612/482-0444
Tank Contractor Certification Number: 0018

D: Consultant: Foth & Van Dyke and Associates
Contact: Allison Dennen
Street/Box: 10340 Viking Drive, #100
City, Zip: Eden Prairie, MN 55344
Telephone: 612/942-0396

E. Others on-site during site work (e.g., fire marshal, local officials, MPCA staff, etc.): Tom Crable - VA Engineering Services

Note: If person other than tank owner and/or operator is conducting the cleanup, provide name, address, and relationship to site on a separate attached sheet.

II. DATES

A. Date release reported to MPCA: 10/24/90

B. Dates site work performed:

Work Performed	Date
Excavation of Tanks	10/22/90
Removal of Additional Soil & Stockpiling	10/23/90

III. RELEASE INFORMATION

A. Provide the following information for all tanks which have been removed.

Tank 1: Capacity 1000 Type Steel - UST Age 32 years

Condition: good-fair surface rust; minor pitting

Product history:
unleaded gasoline

Approximate quantity of petroleum released, if known:
Not known

Cause of release:
Release can be attributed to two causes:
1. Tank leakage; noticeable pinholes
2. Surface spills when filling

Tank 2: Capacity 1500 Type Steel - UST Age 16 years

Condition: fair-poor; noticeable pitting; discoloration and moisture around one end

Product history:
regular gasoline

Approximate quantity of petroleum released, if known:
Not known

Cause of release:
Release can be attributed to three causes:
1. Tank leakage; noticeable pinholes
2. Surface spills when filling the tank
3. Leakage from the line connecting tank 2 and 3

Tank 3: Capacity 4000 Type Steel - UST Age 14 years

Condition: Fair

Product history:
Regular gasoline

Approximate quantity of petroleum released, if known:
Not known

Cause of release:
Release can be attributed to three causes:
1. Tank leakage; noticeable pinholes
2. Surface spills when filling the tank
3. Leakage from the line connecting tank 2 and 3

B. Provide the following information for all existing tanks.

Tank No.	Capacity	Contents	Type	Age
N/A				

C. If the release was associated with the lines or dispensers, briefly describe the problem:

One probable cause of the release is leakage from the pipe connecting tanks 2 and 3.

D. If the release was a surface spill, briefly describe the problem:

Another probable cause of the release is surface spill since the dispensing area is a nonpermeable surface.

IV. EXCAVATION

A. Dimensions of excavation: 40' x 26' x 15'

B. Original tank backfill material (sand, gravel, etc.): Sand

C. Native soil type (clay, sand, etc.): Sand with trace of clay and/or gravel

D. Quantity of contaminated soil removed (cubic yards): 180 cubic yards

E. Was ground water encountered or was there evidence of a seasonally high ground water table? At what depth?

No

F. If a soil boring was necessary (as indicated in part VI of "Excavation of Petroleum Contaminated Soil" for sand and silty sand native soils) describe the soil analytical and soil vapor headspace results. Attach the boring logs and laboratory results to this report.

N/A

G. If ground water was encountered or if a soil boring was conducted, was there evidence of ground water contamination? Specify, e.g., free product (specify thickness), product sheen, ground water in contact with petroleum contaminated soil, water analytical results, etc.

N/A

H. Was bedrock encountered in the excavation? At what depth?

N/A

I. Were there other unique conditions associated with this site? If so, explain.

N/A

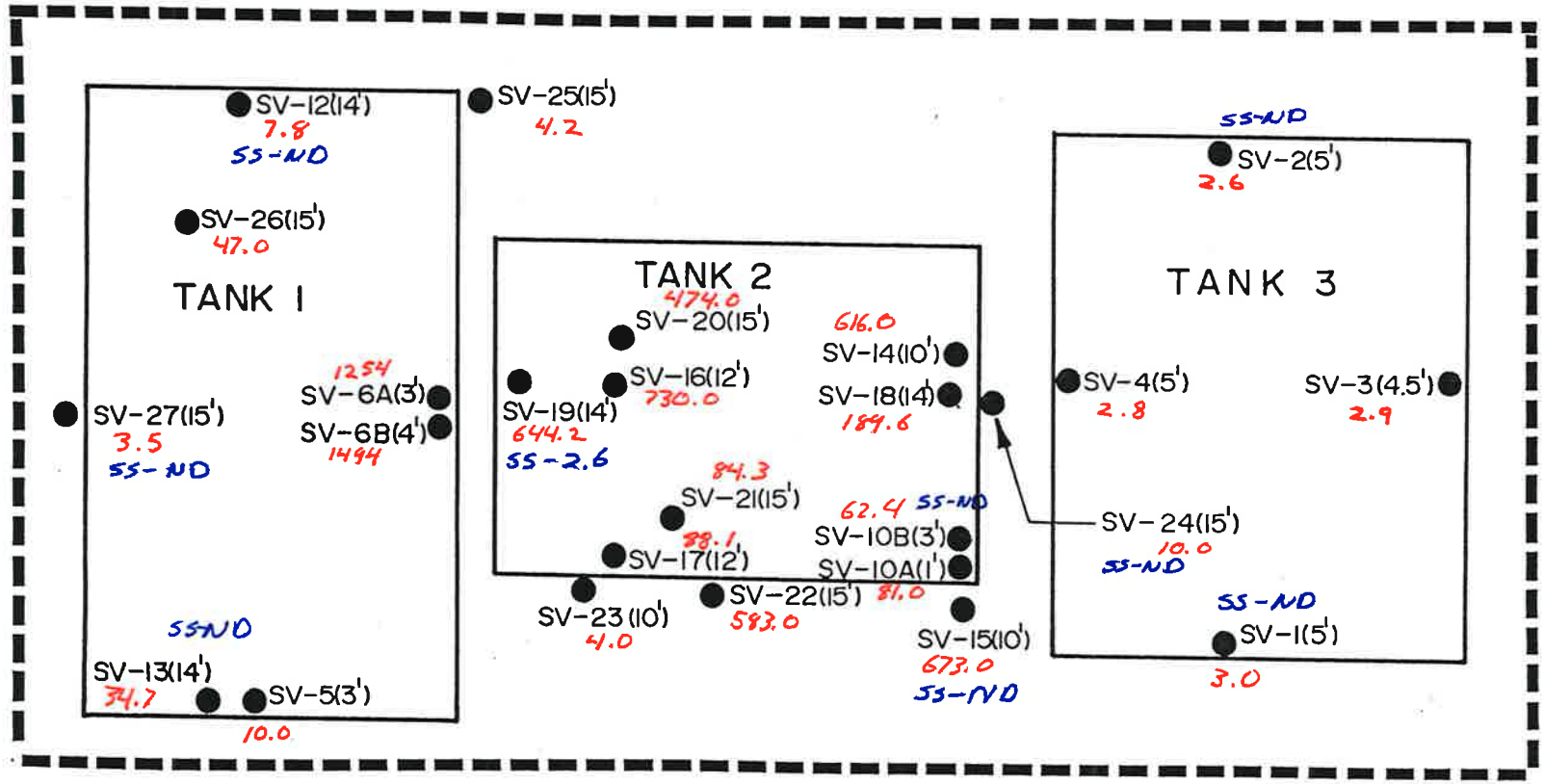
V. SAMPLING

A. Briefly describe the field methods (including use of a photoionization detector) used to distinguish contaminated from uncontaminated soil:

The tank excavation was enlarged to remove soils that showed visual or olfactory evidence of contamination. Areas of suspected contamination were sampled for jar headspace analysis in accordance with MPCA guidelines, using a Photovac MicroTIP. Soil with elevated TIP readings were stockpiled with the known contaminated soil.

B. List soil vapor headspace analysis results. Indicate sampling locations using sample codes (with sampling depths in parentheses), e.g. SV-1 (2'), SV-2 (10'), etc. Samples that were taken at different depths at the same location should be labeled SV-1A (2'), SV-1B (4'), SV-1C (6'), etc. These should correspond with the codes on the site map in part VI.

Sample Code	Soil Type	Reading, ppm	Sample Code	Soil Type	Reading, ppm
SV-1	SAND	3.0	SV-17	SAND	88.1
SV-2	SAND	2.6	SV-18	SAND	189.6
SV-3	SAND	2.9	SV-19	SAND	644.2
SV-4	SAND	2.8	SV-20	SAND	474.0
SV-5	SAND	10.0	SV-21	SAND	84.3
SV-6A	SAND	1254.0	SV-22	SAND	583.0
SV-6B	SAND	1494.0	SV-23	SAND	4.0
SV-7	SAND	4.6	SV-24	SAND	10.0
SV-8	SAND	2.7	SV-25	SAND	4.2
SV-9	SAND	7.5	SV-26	SAND	47.0
SV-10	SAND	62.4	SV-27	SAND	3.5
SV-11	SAND	81.0			
SV-12	SAND	7.8			
SV-13	SAND	34.7			
SV-14	SAND	616.0			
SV-15	SAND	673.0			
SV-16	SAND	730.0			



LEGEND

● SV-1(5') — LOCATION OF SOIL VAPOR ANALYSIS & DEPTH

▬ ▬ ▬ — EXCAVATION LIMITS

FORT SNELLING NATIONAL CEMETERY

FIGURE 3

LOCATIONS OF SOIL VAPOR ANALYSIS

Scale: NO SCALE	Date: 1/7/91
Prepared by: Foth & Van Dyke	By: ALD

C. Briefly describe the soil sampling and handling procedures used:
Soil samples were collected and screened for photoionizable organic compounds, with a photovac MicroTIP every 10 cubic yards of removal, in accordance with MPCA Jar Headspace procedures. Soil samples were collected for laboratory analysis of BETX, MTBE, and THC as gasoline and lead at areas of suspected contamination, two below the termination of the excavation and from the undisturbed side walls. Samples were thermally preserved upon collection, and then transported to PACE Laboratories, Inc. in Minneapolis, MN under chain-of-custody procedures.

D. List the appropriate soil sample analytical results below (refer to the MPCA document "Soil and Ground Water Analysis at Petroleum Release Sites"). If the petroleum was not gasoline or fuel oil attach a separate table. Code the samples (with sampling depths in parentheses) SS-1 (8'), SS-2 (4'), etc. These should correspond with the codes on the site map in part VI.

Sample Code	THC as gas or FO ppm	Benzene ppm	Ethyl-benzene ppm	Toluene ppm	Xylene ppm	MTBE ppm	Lead ppm
SV-1 (5')	ND	ND	ND	ND	ND	ND	ND
SV-2 (5')	ND	ND	ND	ND	ND	ND	5.7
SV-10B (3')	ND	ND	ND	ND	ND	ND	19.0
SV-12 (14')	ND	ND	ND	ND	ND	ND	7.2
SV-13 (14')	ND	ND	ND	ND	ND	ND	8.9
SV-15 stockpile	31	ND	ND	ND	ND	ND	20.0
SV-19 (14')	2.6	ND	ND	ND	ND	ND	21.0
SV-24 (15')	ND	ND	ND	ND	ND	ND	19.0
SV-27 (15')	ND	ND	ND	ND	ND	ND	6.6
MDL	1.0	0.12	0.12	0.12	0.12	0.12	5.0

MDL - METHOD DETECTION LIMIT
NOTE: ATTACH COPIES OF LABORATORY REPORTS AND CHAIN OF CUSTODY FORMS.

VI. FIGURES

Attach the following figures to this report:

1. Site location map
2. Site map(s) drawn to scale illustrating the following:
   a. location (or former location) of all present and former tanks, lines, and dispensers
   b. location of other structures (buildings, canopies, etc.)
   c. adjacent city, township, or county roadways
   d. final extent of excavation
   e. location of soil vapor analyses (e.g. SV-1), soil samples (e.g. SS-1), and soil borings (e.g. SB-1). Also, attach all boring logs.
   f. north arrow and map legend

VII. SUMMARY

Briefly summarize evidence indicating whether or not additional investigation is necessary at the site, as discussed in part VI of the MPCA document "Excavation of Petroleum Contaminated Soil". Soil contamination associated with the tank excavations was limited to the area immediately surrounding the tanks excavated. Excavation of the impacted soil and the removal of the three tanks has likely remediated the immediate area. Laboratory results from soil samples collected beyond the extent of the excavation show no indication of being adversely impacted by the release. Laboratory results from soil samples collected from beneath the tank and at the extent of the excavation detected lead in every sample except SV-1. The lead levels are below typical background levels for lead in the soils of this region (Linday 1979). Total hydrocarbons as gasoline were detected 5' below the west end of Tank 2 at 2.6 ppm and in the stockpile at 31.0 ppm.

Additional hydrocarbons that are less volatile than gasoline were detected in soil samples collected from the stockpile and at Tank 2. Specific parameters and concentrations could not be identified by the laboratory. Total hydrocarbon values for soil left in place were detected at low concentrations (<10.0 ppm) and in the opinion of Foth &Van Dyke pose no immediate environmental impact to soil or groundwater. Therefore, Foth & Van Dyke recommends no further action be taken at this site.

VIII. CONSULTANT (OR OTHER) PREPARING THIS REPORT

Company Name: Foth & Van Dyke
Street/Box: 10340 Viking Drive, Suite 100
City, Zip: Eden Prairie, MN 55344
Telephone: 612/942-0396
Contact: Allison Dennen

Signature: Allison K Dennen Date: 12/27/90

If additional investigation is not required at the site, please mail this form and all necessary attachments to:

Minnesota Pollution Control Agency
Attention: (Project Manager)
Hazardous Waste Division
Tanks and Spills Section
520 Lafayette Road
St. Paul, Minnesota 55155

If additional investigation is required at the site, this form should be included as a section in the Remedial Investigation/Corrective Action Design report. Excavation reports which indicate that a remedial investigation (RI) is necessary will not be reviewed by MPCA staff until the RI has been completed.